AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) A method for treating neuropathic pain without alleviating acute pain, comprising:

identifying a subject in need of such treatment; and

providing the subject with an effective amount of at least one compound that selectively activates the M(1) receptor subtype, whereby one or more symptoms of the neuropathic pain are reduced and wherein the compound does not alleviate acute pain.

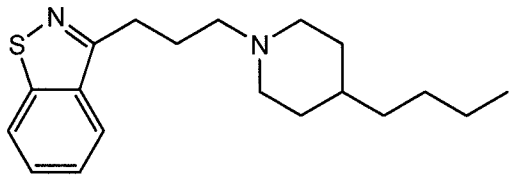
2. (ORIGINAL) The method of claim 1, wherein the subject presents hyperalgesia.

3. (ORIGINAL) The method of claim 1, wherein the subject presents allodynia.

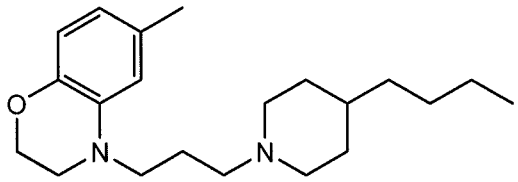
4. (ORIGINAL) The method of claim 1, wherein the neuropathic pain is associated with diabetes, viral infection, irritable bowel syndrome, amputation, cancer, or chemical injury.

5. (CANCELED)

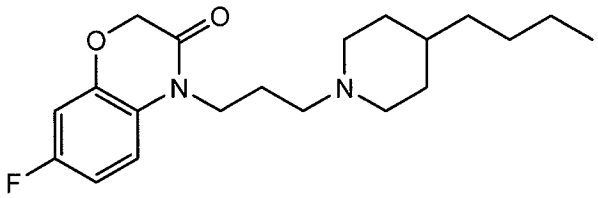
6. (ORIGINAL) The method of claim 1, wherein the compound is selected from the group consisting of the compounds of Formulas VII, VIII, and IX:



(VII)



(VIII)



(IX)

7. (CURRENTLY AMENDED) A method of identifying a compound that alleviates hyperalgesia or allodynia in a subject without alleviating acute pain, comprising:

providing the subject with at least one selective muscarinic receptor test compound; and

determining if the at least one test compound reduces hyperalgesia or allodynia in the subject without alleviating acute pain.

8. (ORIGINAL) The method of claim 7, wherein the at least one test compound is selective for the M(1) or M(4) but not M(2) or M(3) receptor.

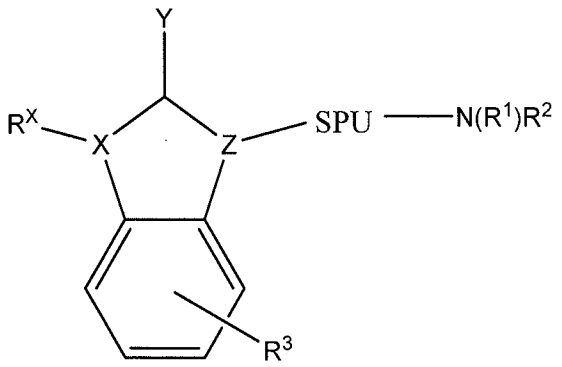
9. (ORIGINAL) The method of claim 7, wherein the at least one test compound is selective for the M(1) receptor.

10. (ORIGINAL) The method of claim 7, wherein the hyperalgesia is thermal hyperalgesia.

11. (ORIGINAL) The method of claim 7, wherein the allodynia is tactile allodynia.

12-13. (CANCELED)

14. (NEW) The method of claim 1, wherein the compound has the structure of formula (I):



(I)

wherein

X is selected from the group consisting of C, O, N and S;

Z is selected from the group consisting of CH and N;

Y is selected from the group consisting of =O, =N and =S or tautomers thereof, such as Y-alkylated tautomers;

SPU is a spacer unit providing a distance d between Z and N wherein —SPU— is a biradical selected from the group consisting of —$(CR^6R^7)_n$—A— and —

C_{3-8}-cycloalkyl-, wherein n is in the range 1 to 5, such as 1, 2, 3, 4, or 5 and A is absent or an optionally substituted —C_{3-8}-cycloalkyl;

N together with R^1 and R^2 form a heterocyclic ring wherein said heterocyclic ring is selected from the group consisting of perhydroazocine, perhydroazepine, piperidine, pyrrolidine, azetidine, aziridine and 8-azabicyclo[3.2.1]octane and wherein the heterocyclic ring is substituted with one or more substituents R^4 selected from the group consisting of hydroxy, halogen, C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{1-8}-alkoxy, C_{1-8}-alkylcarbonyl, C_{1-8}-alkylidene, C_{2-8}-alkenyl, C_{2-8}-alkynyl, C_{1-6}-alkyloxyimino, and C_{1-6}-alkyloxyamino each of which may be optionally substituted with a substituent R^5 and wherein at least one of said substituents R^4 is $R^{4'}$ selected from the group consisting of C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{1-8}-alkoxy, C_{1-8}-alkylcarbonyl, C_{1-8}-alkylidenec C_{1-8}-alkyloxyimino, and C_{1-8}-alkyloxyamino each of which may be optionally substituted with a substituent R^5;

R^5 is selected from the group consisting of hydrogen, halogen, hydroxy, C_{1-8}-alkyl, C_{1-8}-alkoxy, C_{3-8}-cycloalkyl, C_{3-8}-heterocyclyl, C_{1-8}-alkylcarbonyl, C_{1-8}-alkylidene, C_{2-8}-alkenyl and C_{2-8}-alkynyl;

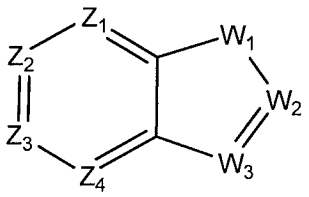
R^X may be absent or selected from the group consisting of hydrogen, optionally substituted C_{1-8}-alkyl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted C_{2-8}-alkenyl, optionally substituted C_{2-8}-alkynyl, optionally substituted aryl, optionally substituted heteroaryl CH_2—$N(R^5)(R^5)$, CH_2—OR^5, CH_2—SR^5, CH_2—O—C(=O)R^5, CH_2—O—C(=S)R^5;

R^3 may be present 0-4 times and selected from the group consisting of halogen, hydroxy, optionally substituted C_{1-8}-alkyl, C_{1-8}-alkoxy, optionally substituted C_{1-8}-alkylidene, optionally substituted C_{2-8}-alkenyl, optionally substituted C_{2-8}-alkynyl optionally substituted aryl, optionally substituted heteroaryl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted C_{3-8}-heterocyclyl, and optionally substituted C_{1-8}-alkylcarbonyl; and

each R^6 and each R^7 is independently selected from the group consisting of hydrogen, halogen, hydroxy, optionally substituted C_{1-8}-alkyl, C_{1-8}-alkoxy, optionally substituted C_{1-8}-alkylidene, optionally substituted C_{2-8}-alkenyl, optionally substituted C_{2-}

$_{8}$-alkynyl optionally substituted aryl, optionally substituted heteroaryl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted C_{3-8}-heterocyclyl, and optionally substituted C_{1-8}-alkylcarbonyl.

15. (NEW) The method of claim 1, wherein the compound has the structure of formula (II):



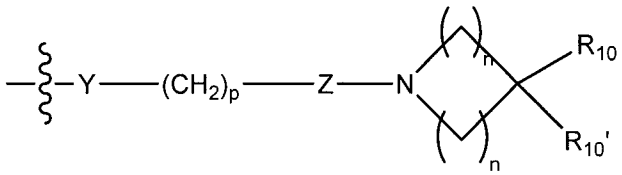
(II)

wherein:

Z_1 is CR_1 or N, Z_2 is CR_2 or N, Z_3 is CR_3 or N, and Z_4 is CR_4 or N, where no more than two of Z_1, Z_2, Z_3 and Z_4 are N;

W_1 is O, S, or NR_5, one of W_2 and W_3 is N or CR_6, and the other of W_2 and W_3 is CG; W_1 is NG, W_2 is CR_5 or N, and W_3 is CR_6 or N; or W_1 and W_3 are N, and W_2 is NG;

G is of formula (III):



(III)

Y is O, S, CHOH, —NHC(O)—, —C(O)NH—, —C(O)—, —OC(O)—, —(O)CO—, —NR_7—, —CH=N—, or absent;

p is 1, 2, 3, 4 or 5;

Z is CR_8R_9 or absent;

each t is 1, 2, or 3;

each R_1, R_2, R_3, and R_4, independently, is H, amino, hydroxyl, halo, or straight- or branched-chain C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} heteroalkyl, C_{1-6} haloalkyl, —CN, —CF_3—OR_{11}, —COR_{11}, —NO_2, —SR_{11}, —$NHC(O)R_1$, —$C(O)NR_{12}R_{13}$, —$NR_{12}R_3$, —$NR_{11}C(O)NR_{12}R_{13}$, —$SO_2NR_{12}R_{13}$, —$OC(O)R_{11}$, —$O(CH_2)_qNR_{12}R_{13}$, or —

$(CH_2)_qNR_{12}R_{13}$, where q is an integer from 2 to 6, or R_1 and R_2 together form —NH—N=N— or R_3 and R_4 together form —NH—N=N—;

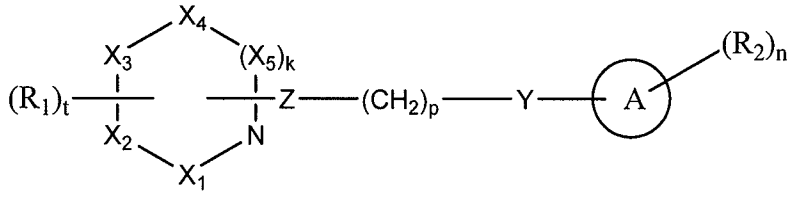
each R_5, R_6, and R_7, independently, is H, C_{1-6} alkyl; formyl; C_{3-6} cycloalkyl; C_{5-6} aryl, optionally substituted with halo or C_{1-6} alkyl; or C_{5-6} heteroaryl, optionally substituted with halo or C_{1-6} alkyl; each R_8 and R_9, independently, is H or straight- or branched-chain C_{1-8} alkyl;

R_{10} is straight- or branched-chain C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-8} alkylidene, C_{1-8} alkoxy, C_{1-8} heteroalkyl, C_{1-8} aminoalkyl, C_{1-8} haloalkyl, C_{1-8} alkoxycarbonyl, C_{1-8} hydroxyalkoxy, C_{1-8} hydroxyalkyl, —SH, C_{1-8} alkylthio, —O—CH_2—C_{5-6} aryl, —C(O)—C_{5-6} aryl substituted with C_{1-3} alkyl or halo, C_{5-6} aryl, C_{5-6} cycloalkyl, C_{5-6} heteroaryl, C_{5-6} heterocycloalkyl, —$NR_{12}R_{13}$, —$C(O)NR_{12}R_{13}$,—$NR_{11}C(O)NR_{12}R_{13}$, —$CR_{11}R_{12}R_{13}$,—$OC(O)R_{11}$, —$(O)(CH_2)_sNR_{12}R_{13}$ or —$(CH_2)_sNR_{12}R_{13}$, s being an integer from 2 to 8;

R_{10}' is H, straight- or branched-chain C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-8} alkylidene, C_{1-8} alkoxy, C_{1-8} heteroalkyl, C_{1-8} aminoalkyl, C_{1-8} haloalkyl, C_{1-8} alkoxycarbonyl, C_{1-8} hydroxyalkoxy, C_{1-8} hydroxyalkyl, or C_{1-8} alkylthio; each R_{11}, independently, is H, straight- or branched-chain C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{2-8} heteroalkyl, C_{2-8} aminoalkyl, C_{2-8} haloalkyl, C_{1-8} alkoxycarbonyl, C_{2-8} hydroxyalkyl, —C(O)—C_{5-6} aryl substituted with C_{1-3} alkyl or halo, C_{5-6} aryl, C_{5-6} heteroaryl, C_{5-6} cycloalkyl, C_{5-6} heterocycloalkyl, —$C(O)NR_{12}R_{13}$, —$CR_5R_{12}R_{13}$, —$(CH_2)_tNR_{12}R_{13}$, t is an integer from 2 to 8; and

each R_{12} and R_{13}, independently, is H, C_{1-6} alkyl; C_{3-6} cycloalkyl; C_{5-6} aryl, optionally substituted with halo or C_{1-6} alkyl; or C_{5-6} heteroaryl, optionally substituted with halo or C_{1-6} alkyl; or R_{12} and R_{13} together form a cyclic structure; or a pharmaceutically acceptable salt, ester or prodrug thereof.

16. (NEW) The method of claim 1, wherein the compound has the structure of formula (IV):



(IV)

wherein

X_1, X_2, X_3, X_4 and X_5 are selected from C, N and O;

k is 0 or 1;

t is 0, 1 or 2;

R_1 is straight or branched-chain C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-8} alkylidene, C_{1-8} alkoxy, C_{1-8} heteroalkyl, C_{1-8} aminoalkyl, C_{1-8} haloalkyl, C_{1-8} alkoxycarbonyl, C_{1-8} hydroxyalkoxy, C_{1-8} hydroxyalkyl, --SH, C_{1-8} alkylthio, --O--CH_2 --C_{5-6} aryl, --C(O)--C_{5-6} aryl substituted with C_{1-3} alkyl or halo; C_{5-6} aryl or C_{5-6} cycloalkyl optionally comprising 1 or more heteroatoms selected from N, S and O; --$C(O)NR_3$ R_4, --NR_3 R_4, --NR_3 $C(O)NR_4$ R_5, --CR_3 R_4, --$OC(O)R_3$, --$(O)(CH_2)_s$ NR_3 R_4 or --$(CH_2)_s$ NR_3 R_4;

where R_3, R_4 and R_5 are the same or different, each independently being selected from H, C_{1-6} alkyl; C_{5-6} aryl optionally comprising 1 or more heteroatoms selected from N, O and S, and optionally substituted with halo or C_{1-6} alkyl; C_{3-6} cycloalkyl; or R_3 and R_4 together with the N atom, when present, form a cyclic ring structure comprising 5-6 atoms selected from C, N, S and O; and

s is an integer from 0 to 8;

A is C_{5-12} aryl or C_{5-7} cycloalkyl, each optionally comprising 1 or more heteroatoms selected from N, S and O;

R_2 is H, amino, hydroxyl, halo, or straight or branched-chain C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, C_{1-6} heteroalkyl, C_{1-6} aminoalkyl, C_{1-6} haloalkyl, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl, --CN, --CF_3, --OR_3, --COR_3, NO_2, --NHR_3, --$NHC(O)R_3$,

--$C(O)NR_3$ R_4, --NR_3 R_4, --NR_3 $C(O)NR_4$ R_5, --$OC(O)R_3$, --$C(O)R_3$ R_4, --$O(CH_2)_q$ NR_3, --CNR_3 R_4 or --$(CH_2)_q$ NR_3 R_4;

where q is an integer from 1 to 6;

n is 0, 1, 2, 3 or 4, the groups R_2, when n>1, being the same or different;

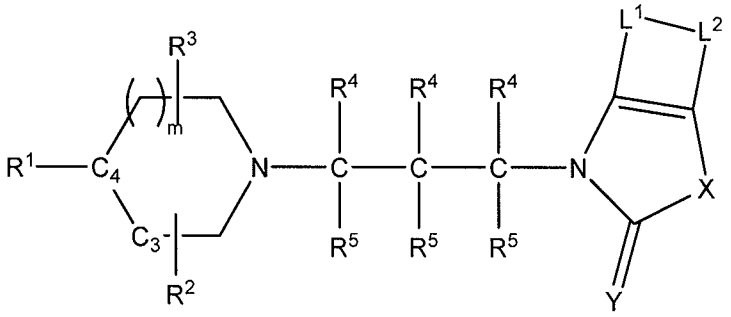
p is 0 or an integer from 1 to 5;

Y is O, S, CHOH, --NHC(O)--, --C(O)NH--, --C(O)--, --OC(O)--, NR_7 or --CH=N--, and

R_7 is H or C_{1-4} alkyl; or absent; and

Z is CR_8 R_9 wherein R_8 and R_9 are independently selected from H, and straight or branched chain C_{1-8} alkyl; or a pharmaceutically acceptable salt, ester or prodrug thereof.

17. (NEW) The method of claim 1, wherein the compound has the structure of formula (V):



(V)

wherein

R^1 is a monoradical selected from the group consisting of optionally substituted C_{1-6}-alkyl, optionally substituted C_{2-6}-alkylidene, optionally substituted C_{2-6}-alkenyl, optionally substituted C_{2-6}-alkynyl, optionally substituted O—C_{1-6}-alkyl, optionally substituted O—C_{2-6}-alkenyl, optionally substituted O—C_{2-6}-alkynyl; optionally substituted S—C_{1-6}-alkyl, optionally substituted S—C_{2-6}-alkenyl, optionally substituted S—C_{2-6}-alkynyl;

m is 0, 1 or 2;

C_3-C_4 is CH_2—CH or CH=C or C_4 is CH and C_3 is absent;

R^2 and R^3 are independently selected from the group consisting of hydrogen, optionally substituted C_{1-6} alkyl, optionally substituted O—C_{1-6} alkyl, halogen, hydroxy or selected such that R^2 and R^3 together form a ring system;

each R^4 and R^5 is independently selected from the group consisting of hydrogen, halogen, hydroxy, optionally substituted C_{1-6}-alkyl, optionally substituted O—C_{1-6}alkyl, optionally substituted aryl-C_{1-6} alkyl, and optionally substituted arylheteroalkyl;

L^1 and L^2 are biradicals independently selected from the group consisting of —$C(R^6)$=$C(R^7)$, —$C(R^6)$=N—, —N=$C(R^6)$—, —S—, —NH— and —O—; wherein only one of L^1 and L^2 may be selected from the group consisting of —S—, —NH— and —O—;

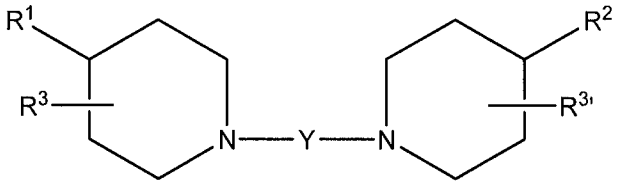
Y is selected from the group consisting of O, S, and H_2;

X is a biradical selected from the group consisting of —$C(R^6)(R^7)$—$C(R^6)(R^7)$—, —$C(R^6)$=$C(R^7)$—, —O—$C(R^6)(R^7)$—, $C(R^6)(R^7)$—O—, —S—$C(R^6)(R^7)$—, —$C(R^6)(R^7)$—S—, —$N(R^N)$—$C(R^6)(R^7)$—, —$C(R^6)(R^7)$—$N(R^N)$—, —$C(R^6)(R^7)$—$C(R^6)(R^7)$—$C(R^6)(R^7)$—, —O—$C(R^6)(R^7)$—$C(R^6)(R^7)$—, S—$C(R^6)(R^7)$—$C(R^6)(R^7)$—, $N(R^N)$—$C(R^6)(R^7)$—$C(R^6)(R^7)$—, —$C(R^6)(R^7)$—$C(R^6)(R^7)$—O, —$C(R^6)(R^7)$—$C(R^6)(R^7)$—S, —$C(R^6)(R^7)$—$C(R^6)(R^7)$—$N(R^N)$—, —$C(R^6)(R^7)$—$C(R^6)$=$C(R^7)$—, and —$C(R^6)$=$C(R^7)$—$C(R^6)(R^7)$,

wherein R^6 and R^7 are independently selected from the group consisting of hydrogen, halogen, hydroxy, nitro, cyano, NR^NR^N, $N(R^N)$—C(O)$N(R^N)$, optionally substituted C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, , optionally substituted O—C_{1-6}-alkyl, optionally substituted O-aryl, optionally substituted O—C_{2-6}-alkenyl, optionally substituted O—C_{2-6}-alkynyl, and

wherein R^N is selected from the group consisting of hydrogen, and optionally substituted C_{1-6}-alkyl.

18. (NEW) The method of claim 1, wherein the compound has the structure of formula (VI):



(VI)

wherein

Y is a biradical of $(CR^4R^5)_m$-Z-$C(R^4R^5)_n$;

wherein the sum m+n is from 1 to 7;

Z is selected from the group consisting of $C(R^4R^5)$, C(O), O, $N(R^6)$, S, O-C(O), $N(R^6)C(O)$, C(O)-O, and P; and

R^4 and R^5 are independently selected from the group consisting of hydrogen, halogen, hydroxy, nitro, $NR^6N^{6'}$, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted heterocyclyl, optionally substituted C_{1-6}-alkyl, optionally substituted C_{1-6}-alkoxy, optionally substituted phenoxy, optionally substituted C_{2-8}-alkenyl and optionally substituted C_{2-8}-alkynyl; and

wherein R^1 and R^2 are independently selected from the group consisting of optionally substituted aryl, optionally substituted heteroaryl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted heterocyclyl, optionally substituted C_{1-6}-alkyl, optionally substituted C_{1-6}-alkoxy, optionally substituted C_{2-8}-alkenyl and optionally substituted C_{2-8}-alkynyl;

wherein R^3 and $R^{3'}$ are independently selected from the group consisting of hydrogen, halogen, hydroxy, nitro, $NR^6N^{6'}$, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted heterocyclyl, optionally substituted C_{1-6}-alkyl, optionally substituted C_{1-6}-alkoxy, optionally substituted C_{2-8}-alkenyl and optionally substituted C_{2-8}-alkynyl; and

R^6 and $R^{6'}$ are independently selected from the group consisting of hydrogen, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted C_{3-8}-cycloalkyl, optionally substituted heterocyclyl, optionally substituted C_{1-6}-alkyl, optionally substituted C_{1-6}-alkoxy, optionally substituted C_{2-8}-alkenyl and optionally substituted C_{2-8}-alkynyl.